

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PST 2168 PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/ 03513	International filing date (day/month/year) 17/04/2000	(Earliest) Priority Date (day/month/year) 12/05/1999
Applicant AKZO NOBEL NV et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. ---

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/03513

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A23K1/16 A61K31/05 A61P1/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23K A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

CAB Data, EPO-Internal, WPI Data, PAJ, BIOSIS, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	M. TIZIANA BARATTA ET AL.: "Chemical composition, antimicrobial and antioxidative activity of laurel, sage, rosemary, oregano and coriander essential oils" JOURNAL OF ESSENTIAL OIL RESEARCH., vol. 10, no. 6, 1998, pages 618-627, XP000929938 XX, XX ISSN: 1041-2905 page 618, Abstract page 620; table I	1,2
Y	---	3-13
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

10 August 2000

Date of mailing of the international search report

01/09/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
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Authorized officer

Dekeirel, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/03513

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 96 37210 A (ROPAPHARM B V I O ;NINKOV DUSAN (NL)) 28 November 1996 (1996-11-28) page 2, line 27 -page 7, line 25 example 9 claims 1-6,10 ---	3-13
X	DATABASE CAB 'Online! CAB INTERNATIONAL, WALLINGFORD, OXON, GB; Accession Nr. 83:13485, TYUTYUNNIK, V.I. ET AL.: "The composition and bactericidal properties of Monarda fistulosa essential oil" XP002144692 abstract & TRUDY VNII EFIROMASLICHNYCKH KULT'UR, vol. 14, 1982, pages 15-21, ---	1,2
X	CHEMICAL ABSTRACTS, vol. 131, no. 23, 6 December 1999 (1999-12-06) Columbus, Ohio, US; abstract no. 308815u, LIN, WENQUIN ET AL.: "Studies on the chemical constituents of essential oil and its antibacterial effect on Mosla chinensis Maxim growing in Fujian Province" page 284; column 2; XP002144691 abstract & FUJIAN SHIFAN DAXUE XUEBAO, ZIRAN KEXUEBAN, vol. 15, no. 2, 1999, pages 88-91, ---	1
X	WO 97 01348 A (NITSAS FOTIOS A) 16 January 1997 (1997-01-16) cited in the application page 3, line 21 -page 4, line 3 page 4, line 14 - line 16 page 7, line 11 - line 25 claims 1,6 ---	1,8,10, 11
A	N. DIDRY ET AL.: "Activité antibactérienne du thymol, du carvacrol et de l'aldéhyde cinnamique seuls ou associés" PHARMAZIE., vol. 48, no. 4, 1993, pages 301-304, XP002144690 VEB VERLAG VOLK UND GESUNDHEIT. BERLIN., DD ISSN: 0031-7144 page 302, column 2, paragraph 4 - last paragraph page 303; table 2 --- -/--	1,2,10, 11

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/03513

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 904 780 A (ROPAPHARM B V) 31 March 1999 (1999-03-31) the whole document ---	1, 10, 11
P, A	WO 99 59430 A (AEBI ROBERT ; LOSA RICCARDO (CH); AKZO NOBEL NV (NL)) 25 November 1999 (1999-11-25) claims 1-4, 8-17 ---	1, 4-8
A	EP 0 630 577 A (CRINA) 28 December 1994 (1994-12-28) claims 1-10 -----	1, 4-7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/03513

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9637210	A	28-11-1996	AU 708703 B	12-08-1999
			AU 5846096 A	11-12-1996
			BG 102142 A	29-05-1998
			BR 9608841 A	07-12-1999
			CA 2222563 A	28-11-1996
			CN 1190892 A	19-08-1998
			EP 0828502 A	18-03-1998
			HU 9900312 A	28-07-1999
			JP 11505832 T	25-05-1999
			NZ 308661 A	29-07-1999
WO 9701348	A	16-01-1997	GR 1002451 B	14-10-1996
			AT 180166 T	15-06-1999
			AU 6314596 A	30-01-1997
			CA 2225713 A	16-01-1997
			DE 69602529 D	24-06-1999
			DE 69602529 T	25-11-1999
			EP 0835120 A	15-04-1998
			GR 3030980 T	31-12-1999
EP 0904780	A	31-03-1999	CA 2248417 A	30-03-1999
			US 5990178 A	23-11-1999
WO 9959430	A	25-11-1999	AU 4141899 A	06-12-1999
			SE 9801742 A	19-11-1999
EP 0630577	A	28-12-1994	CH 686923 A	15-08-1996
			AT 172601 T	15-11-1998
			CA 2126288 A	23-12-1994
			DE 69414180 D	03-12-1998
			DE 69414180 T	08-04-1999
			ES 2123685 T	16-01-1999
			FI 942994 A	23-12-1994
			US 5565211 A	15-10-1996

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A 3028 u	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/03531	International filing date (day/month/year) 19 April 2000 (19.04.00)	Priority date (day/month/year) 03 May 1999 (03.05.99)
International Patent Classification (IPC) or national classification and IPC A61C 3/14		
Applicant LANGER, Horst		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 09 September 2000 (09.09.00)	Date of completion of this report 05 February 2001 (05.02.2001)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP00/03531

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages _____ 1-22,29 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages _____ 1-28 _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the drawings:
pages _____ 1/14-14/14 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 00/03531

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-28	YES
	Claims		NO
Inventive step (IS)	Claims	1-28	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

2. Citations and explanations

DE-C-603 210 (D1), which is regarded as the closest prior art, discloses a device for extracting a tooth. The device has a pin configured as a hollow rivet that is split towards the tip in a split-pin-like manner and whose head is anchored, when a needle is introduced, as a result of expansion into a drilled hole in the tooth. However, this pin does not appear to be suitable for breaking up the tooth.

The features of Claim 1 enable extraction to be less traumatic and to cause fewer complications by breaking up the tooth in a manner that does not involve shear force or bending moment.

The device of **DE-A-196 46 097** (D2) enables the force produced by the lifting device (18) to be exerted in the longitudinal direction on the tooth to be extracted, which means that the tooth extraction occurs without shear force or bending moment. However, the device from D2 appears not to be suitable for breaking up a tooth. The devices according to the other cited documents also appear unsuitable for this purpose. Further, it appears that none of the cited documents discloses the features of the characterizing part. Therefore the subject of Claim 1 and

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 00/03531

its dependent Claims 2-28 appear to meet the requirements of PCT Article 33(2) and (3).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 00/03531

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

In order to meet the requirements of PCT Rule 5.1
(a)(ii), the description should have cited **D2** and
described in brief the prior art contained therein.

FOR THE PURPOSES OF INFORMATION ONLY



Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
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AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
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BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PST 2168 PCT		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/03513	International filing date (day/month/year) 17/04/2000	Priority date (day/month/year) 12/05/1999	
International Patent Classification (IPC) or national classification and IPC A23K1/16			
Applicant AKZO NOBEL NV et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input checked="" type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 			
Date of submission of the demand 01/12/2000		Date of completion of this report 29.05.2001	
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Couzy, F Telephone No. +49 89 2399 7503 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/03513

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*)
- Description, pages:**

2-10 as originally filed

1,1a as received on 10/05/2001 with letter of 09/05/2001

Claims, No.:

1-10 as received on 10/05/2001 with letter of 09/05/2001

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/03513

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-4, 6-10
	No:	Claims	5
Inventive step (IS)	Yes:	Claims	1-4, 6-10
	No:	Claims	5
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	

- 2. Citations and explanations**
see separate sheet

VI. Certain documents cited

- 1. Certain published documents (Rule 70.10)**

and / or

- 2. Non-written disclosures (Rule 70.9)**

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re Item V

Reasoned statement under Rule 35 (2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

- D1: M. TIZIANA BARATTA ET AL.: 'Chemical composition, antimicrobial and antioxidative activity of laurel, sage, rosemary, oregano and coriander essential oils' JOURNAL OF ESSENTIAL OIL RESEARCH., vol. 10, no. 6, 1998, pages 618-627, XP000929938 XX, XX ISSN: 1041-2905
- D2: WO 96 37210 A (ROPAPHARM B V I O ;NINKOV DUSAN (NL)) 28 November 1996 (1996-11-28)
- D3: WO 97 01348 A (NITSAS FOTIOS A) 16 January 1997 (1997-01-16) cited in the application
- D4: EP-A-0 904 780 (ROPAPHARM B V) 31 March 1999 (1999-03-31)
- D5: WO 99 59430 A (AEBI ROBERT ;LOSA RICCARDO (CH); AKZO NOBEL NV (NL)) 25 November 1999 (1999-11-25)
- D6: EP-A-0 630 577 (CRINA) 28 December 1994 (1994-12-28)
- D7: DATABASE CAB [Online] CAB INTERNATIONAL, WALLINGFORD, OXON, GB; Accession Nr. 83:13485, TYUTYUNNIK, V.I. ET AL.: 'The composition and bactericidal properties of Monarda fistulosa essential oil' XP002144692 & TRUDY VNII EFIROMASLICHNYCKH KULT'UR, vol. 14, 1982, pages 15-21,
- D8: CHEMICAL ABSTRACTS, vol. 131, no. 23, 6 December 1999 (1999-12-06) Columbus, Ohio, US; abstract no. 308815u, LIN, WENQUIN ET AL.: 'Studies on the chemical constituents of essential oil and its antibacterial effect on Mosla chinensis Maxim growing in Fujian Province' page 284; column 2; XP002144691 & FUJIAN SHIFAN DAXUE XUEBAO, ZIRAN KEXUEBAN, vol. 15, no. 2, 1999, pages 88-91,
- D9: N. DIDRY ET AL.: 'Activité antibactérienne du thymol, du carvacrol et de l'aldéhyde cinnamique seuls ou associés' PHARMAZIE., vol. 48, no. 4, 1993, pages 301-304, XP002144690 VEB VERLAG VOLK UND GESUNDHEIT. BERLIN., DD ISSN: 0031-7144
- D10: WO 96/37210 (NINKOV DUSAN, NL); ROPAPHARM BV (NL) 28 November 1996 (1996-11-28)

V.1 Subject-matter of claims 1-4 and 6-10 is new in the sense of Article 33 (2) and

appears to involve an inventive step in the sense of Article 33(3) PCT. However, the subject-matter of independent claim 5 is not new in the sense of Article 33 (2) PCT.

V.1.a None of the documents cited as prior art discloses the efficacy of an association of carvacrol and thymol against the bacteria treponema. Thus, **the subject-matter of independent claim 1 and claims 2-4 dependent thereof, as well as that of independent claim 10, is new.** Furthermore, no prior art document discloses that a synergistic effect is found when the carvacrol:thymol ratio is comprised between 1:5 and 10:1. The closest prior art is document D1, which discloses that oregano oil, with a ratio between carvacrol and thymol of 0.51 (Table 1), has a high and broad antibacterial activity (bottom of 5th page of the article). Document D6 discloses a synergistic effect between both compounds, but no range where this effect is to be found. Nor do these documents suggest levels of carvacrol and thymol in the composition. Thus, a man skilled in the art faced with the problem of finding a composition that is active against treponema, would not be able to derive the subject-matter of independent claim 1 from the prior art. Thus, **subject-matter of said independent claims 1 and 10, as well as that of dependent claims 2-4, involves an inventive step.**

V.1.b The carvacrol:thymol ratio in rosemary oil is of 1, as shown in Table 1 of D1. This document does not disclose the individual concentrations of carvacrol and thymol in rosemary oil, but given the very wide range selected for the concentrations of these compounds it is extremely likely that the oil itself (as well as compositions prepared with rosemary oil) **anticipates the subject-matter of claim 5, which is therefore not new.**

V.1.c Document D1 does not reveal diet compositions, drinking water supplements, drench bath supplements, nor that these would be effective against treponema and in the prevention of the diseases induced by that bacteria when applied in their specific modes. Thus, **the subject-matter of independent claims 6, 8 and 9, and of dependent claim 7 is new and involves an inventive step.**

V.2 **The subject-matter of all claims is industrially applicable in the sense of Article 33 (4) PCT, as the use claims 1-4 and 10 are correctly worded to exclude methods for the treatment of a human or an animal.**

INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET

International application No. PCT/EP00/03513

10/030886

531 Rec'd PCT/EP 07 NOV 2001

Re Item VI

Certain documents cited

VI.1 Certain published documents (Rule 70.10)

Application No	Publication date (day/month/year)	Filing date(day/month/year) (day/month/year)	Priority date (valid claim)
WO99/59430	25.11.1999	06.05.1999	18.05.1998

Was not published before the current application but is comprised in the state of the art under the provisions of Art. 64(3) and claims an earlier priority date. Whether this priority date is valid was not verified. This document apparently does not disclose an association between thymol and carvacrol.

VI.2 D4 is a citation of the abstract of an article in the "Fujian Shifan Daxue Xuebao, Ziran Kexueban". The date of publication of the original article could not be checked in time for the preparation of this report. Thus, for practical purposes it was assumed for the current preliminary report that the original Chinese document was published before the priority date of the application. This document does not disclose the invention.

Re Item VIII

Certain observations on the international application

VIII.1 The amounts specified in dependent claim 3 are to be "calculated on dry weight of the composition" (p.2 li.37). Omitting this feature results in **lack of clarity and lack of support of dependent claim 3** (Art. 6 PCT), and **introduces subject-matter beyond the content of the application as filed** (Art. 19 (2) PCT).

VIII.2 The **trade marks** "Olaquinox" and "Tiamulin" employed in the description on page 9 li. 1-2 should be identified as such.

VIII.3 The wording "protein components" of **claim 7** is not supported by the description (p.4 li.3), where the wording "protein-containing components" is used, resulting in **lack of clarity** of the claim (Art 6 PCT).

A COMPOSITION CONTAINING CARVACROL AND THYMOL FOR USE AS A
BACTERICIDE

The present invention relates to a composition
5 containing the natural substances carvacrol and thymol. The
composition exhibits a synergistic bactericidal effect
against *Treponema*, which causes severe muco-hemorrhagic
diseases, such as swine dysentery and severe diseases
affecting the hoofs of hoofed animals, particularly cloven-
10 hoofed animals, such as ruminants. The composition is
suitably administered to an animal via a diet composition,
drinking water or a drench bath.

Diseases caused by *Treponema* are common in animal
stocks. For example, an anaerobic spirochete, *Treponema*
15 *hyodysenteriae*, is considered to be the primary etiologic
agent of swine dysentery (SD). See for instance D.L. Harris
and R.J. Lysons (1992), Swine dysentery, in: Diseases of
swine, 7th edition, Iowa State University Press, Ames, Iowa,
USA. SD is a severe muco-hemorrhagic diarrhoea. Pigs
20 actually affected with SD usually consume very low amounts
of feed causing an essential reduction in growth and a
considerable economical loss. In Top Agrar (1998), Vol. 4,
page 52 it is reported that in Germany one third of the
piglets herds and as much as one half of the growing pig
25 herds probably are *Treponema*-positive. Large efforts are
therefore justified to prevent the diseases to be spread. It
is also well known that *Treponema* causes severe diseases
affecting the hoofs of hoofed animals, particularly cloven-
hoofed animals, such as ruminants.

30 M. Tiziana Baratta et al.: "Chemical
composition, antimicrobial and antioxidative activity
of laurel, sage, rosemary, oregano and coriander
essential oils" Journal of Essential Oil Research.,
vol. 10, no 6, 1998, pages 618-627, XP000929938 XX, XX
35 ISSN: 1041-2905, disclose the chemical composition of
five essential oils, derived from sage, rosemary,
oregano, laurel and coriander, and also the anti-

bacterial activity of these essential oils against a number of microorganisms.

WO 96/37210 describes a pharmaceutical composition wherein the active agent is an extract from certain plants, especially *Origanum vulgare*, *Thymus vulgaris* and *Mentha piperita*. In general, the extracted oil contains 3% thymol and 60-70% carvacrol

Furthermore, in WO 97/01348 it is disclosed a pharmaceutical composition comprising a herbal essential oil containing thymol and carvacrol as its main ingredients and pharmaceutically acceptable carrier. The total amount of thymol and carvacrol in said essential oil is at least 55%, preferably 70% by weight of said essential oil, and the ratio of carvacrol to thymol is at least 10. This pharmaceutical composition can be used in the prevention and treatment of coccidiosis in poultry.

CLAIMS

1. Use of a composition containing carvacrol in an amount of 5 ppm to 90% by dry weight, and thymol in an amount of 5 ppm to 80% by dry weight, the weight ratio between carvacrol and thymol being from 1:5 to 10:1, as an active agent for the manufacture of a medicament for treatment of diseases caused by Treponema.
2. Use according to claim 1, where the weight ratio is from 2:3 to 4:1.
3. Use according to claim 1 or 2, where the medicament is a diet composition containing carvacrol and thymol in amounts from 5 to 2000 ppm.
4. Use according to any one of claims 1-3 for the treatment of swine dysentery or for the treatment of the hoofs of hoofed animals.
5. A composition, characterized in that it contains carvacrol in an amount of 5 ppm to 90% by dry weight and thymol in an amount of 5 ppm to 80% by dry weight, the weight ratio between carvacrol and thymol being 2:3 to 4:1.
6. A diet composition according to claim 5, characterized in that it contains carvacrol and thymol in amounts of 5-2000 ppm calculated on dry weight of the diet composition.
7. A diet composition according to claim 6, characterized in that the diet composition contains 0.1-30 ppm calculated on the dry weight of natural substances, selected from the group consisting of guaiacol, eugenol, capsascins and tannin, which enhance the health and increase the growth, and/or 0.2-50 ppm calculated on the dry weight of natural substances, selected from the group consisting of creosol, anethole, deca-, undeca- and/or dodecalactones, quinoline, ionones and/or irone, gingerol, piperine, propylidene and/or butylidene phthalides, amyl and/or benzyl salicylate.

8. A drinking water supplement according to claim 5, characterized in that it contains 2-90% by dry weight of carvacrol and thymol.
9. A drench bath supplement according to claim 5, characterized in that it contains 30-98% by dry weight of carvacrol and thymol.
10. Non-pharmaceutical use of a composition according to claim 5 as a bactericide against Treponema.

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PST 2168 PCT	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP00/03513	International filing date (day/month/year) 17/04/2000	Priority date (day/month/year) 12/05/1999
International Patent Classification (IPC) or national classification and IPC A23K1/16		
Applicant AKZO NOBEL NV et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☒ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 01/12/2000	Date of completion of this report 29.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Couzy, F Telephone No. +49 89 2399 7503 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/03513

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
- Description, pages:**

2-10 as originally filed

1,1a as received on 10/05/2001 with letter of 09/05/2001

Claims, No.:

1-10 as received on 10/05/2001 with letter of 09/05/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/03513

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-4, 6-10
	No:	Claims	5
Inventive step (IS)	Yes:	Claims	1-4, 6-10
	No:	Claims	5
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/03513

R It m V

Reasoned statement under Rule 35 (2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

- D1: M. TIZIANA BARATTA ET AL.: 'Chemical composition, antimicrobial and antioxidative activity of laurel, sage, rosemary, oregano and coriander essential oils' JOURNAL OF ESSENTIAL OIL RESEARCH., vol. 10, no. 6, 1998, pages 618-627, XP000929938 XX, XX ISSN: 1041-2905
- D2: WO 96 37210 A (ROPAPHARM B V I O ; NINKOV DUSAN (NL)) 28 November 1996 (1996-11-28)
- D3: WO 97 01348 A (NITSAS FOTIOS A) 16 January 1997 (1997-01-16) cited in the application
- D4: EP-A-0 904 780 (ROPAPHARM B V) 31 March 1999 (1999-03-31)
- D5: WO 99 59430 A (AEBI ROBERT ; LOSA RICCARDO (CH); AKZO NOBEL NV (NL)) 25 November 1999 (1999-11-25)
- D6: EP-A-0 630 577 (CRINA) 28 December 1994 (1994-12-28)
- D7: DATABASE CAB [Online] CAB INTERNATIONAL, WALLINGFORD, OXON, GB; Accession Nr. 83:13485, TYUTYUNNIK, V.I. ET AL.: 'The composition and bactericidal properties of Monarda fistulosa essential oil' XP002144692 & TRUDY VNII EFIROMASLICHNYCKH KULT'UR, vol. 14, 1982, pages 15-21,
- D8: CHEMICAL ABSTRACTS, vol. 131, no. 23, 6 December 1999 (1999-12-06) Columbus, Ohio, US; abstract no. 308815u, LIN, WENQUIN ET AL.: 'Studies on the chemical constituents of essential oil and its antibacterial effect on Mosla chinensis Maxim growing in Fujian Province' page 284; column 2; XP002144691 & FUJIAN SHIFAN DAXUE XUEBAO, ZIRAN KEXUEBAN, vol. 15, no. 2, 1999, pages 88-91,
- D9: N. DIDRY ET AL.: 'Activité antibactérienne du thymol, du carvacrol et de l'aldéhyde cinnamique seuls ou associés' PHARMAZIE., vol. 48, no. 4, 1993, pages 301-304, XP002144690 VEB VERLAG VOLK UND GESUNDHEIT. BERLIN., DD ISSN: 0031-7144
- D10: WO 96/37210 (NINKOV DUSAN, NL); ROPAPHARM BV (NL) 28 November 1996 (1996-11-28)

V.1 Subj ct-matt r of claims 1-4 and 6-10 is n w in th s ns of Article 33 (2) and

appears to involve an inventive step in the sense of Article 33(3) PCT. However, the subject-matter of independent claim 5 is not new in the sense of Article 33 (2) PCT.

V.1.a None of the documents cited as prior art discloses the efficacy of an association of carvacrol and thymol against the bacteria treponema. Thus, **the subject-matter of independent claim 1 and claims 2-4 dependent thereof, as well as that of independent claim 10, is new.** Furthermore, no prior art document discloses that a synergistic effect is found when the carvacrol:thymol ratio is comprised between 1:5 and 10:1. The closest prior art is document D1, which discloses that oregano oil, with a ratio between carvacrol and thymol of 0.51 (Table 1), has a high and broad antibacterial activity (bottom of 5th page of the article). Document D6 discloses a synergistic effect between both compounds, but no range where this effect is to be found. Nor do these documents suggest levels of carvacrol and thymol in the composition. Thus, a man skilled in the art faced with the problem of finding a composition that is active against treponema, would not be able to derive the subject-matter of independent claim 1 from the prior art. Thus, **subject-matter of said independent claims 1 and 10, as well as that of dependent claims 2-4, involves an inventive step.**

V.1.b The carvacrol:thymol ratio in rosemary oil is of 1, as shown in Table 1 of D1. This document does not disclose the individual concentrations of carvacrol and thymol in rosemary oil, but given the very wide range selected for the concentrations of these compounds it is extremely likely that the oil itself (as well as compositions prepared with rosemary oil) **anticipates the subject-matter of claim 5, which is therefore not new.**

V.1.c Document D1 does not reveal diet compositions, drinking water supplements, drench bath supplements, nor that these would be effective against treponema and in the prevention of the diseases induced by that bacteria when applied in their specific modes. Thus, **the subject-matter of independent claims 6, 8 and 9, and of dependent claim 7 is new and involves an inventive step.**

V.2 **The subject-matter of all claims is industrially applicable** in the sense of Article 33 (4) PCT, as the use claims 1-4 and 10 are correctly worded to exclude methods for the treatment of a human or an animal.

Re Item VI

Certain documents cited

VI.1 Certain published documents (Rule 70.10)

Application No	Publication date (day/month/year)	Filing date(day/month/year) (day/month/year)	Priority date (valid claim)
WO99/59430	25.11.1999	06.05.1999	18.05.1998

Was not published before the current application but is comprised in the state of the art under the provisions of Art. 64(3) and claims an earlier priority date. Whether this priority date is valid was not verified. This document apparently does not disclose an association between thymol and carvacrol.

VI.2 D4 is a citation of the abstract of an article in the "Fujian Shifan Daxue Xuebao, Ziran Kexueban". The date of publication of the original article could not be checked in time for the preparation of this report. Thus, for practical purposes it was assumed for the current preliminary report that the original Chinese document was published before the priority date of the application. This document does not disclose the invention.

Re Item VIII

Certain observations on the international application

VIII.1 The amounts specified in dependent claim 3 are to be "calculated on dry weight of the composition" (p.2 li.37). Omitting this feature results in **lack of clarity and lack of support of dependent claim 3** (Art. 6 PCT), and **introduces subject-matter beyond the content of the application as filed** (Art. 19 (2) PCT).

VIII.2 The **trade marks** "Olaquinox" and "Tiamulin" employed in the description on page 9 li. 1-2 should be identified as such.

VIII.3 The wording "protein components" of **claim 7** is not supported by the description (p.4 li.3), where the wording "protein-containing components" is used, resulting in **lack of clarity** of the claim (Art 6 PCT).

0
rep/reqd 34
by Art WO 00/69277
Amendment

A COMPOSITION CONTAINING CARVACROL AND THYMOL FOR USE AS A
BACTERICIDE

The present invention relates to a composition
5 containing the natural substances carvacrol and thymol. The
composition exhibits a synergistic bactericidal effect
against Treponema, which causes severe muco-hemorrhagic
diseases, such as swine dysentery and severe diseases
affecting the hoofs of hoofed animals, particularly cloven-
10 hoofed animals, such as ruminants. The composition is
suitably administered to an animal via a diet composition,
drinking water or a drench bath.

Diseases caused by Treponema are common in animal
stocks. For example, an anaerobic spirochete, Treponema
15 hyodysenteriae, is considered to be the primary etiologic
agent of swine dysentery (SD). See for instance D.L. Harris
and R.J. Lyons (1992), Swine dysentery, in: Diseases of
swine, 7th edition, Iowa State University Press, Ames, Iowa,
USA. SD is a severe muco-hemorrhagic diarrhoea. Pigs
20 actually affected with SD usually consume very low amounts
of feed causing an essential reduction in growth and a
considerable economical loss. In Top Agrar (1998), Vol. 4,
page 52 it is reported that in Germany one third of the
piglets herds and as much as one half of the growing pig
25 herds probably are Treponema-positive. Large efforts are
therefore justified to prevent the diseases to be spread. It
is also well known that Treponema causes severe diseases
affecting the hoofs of hoofed animals, particularly cloven-
hoofed animals, such as ruminants.

30 Furthermore, in WO 97/01348 it is disclosed a
pharmaceutical composition comprising a herbal essential oil
containing thymol and carvacrol as its main ingredients and
pharmaceutically acceptable carrier. The total amount of
thymol and carvacrol in said essential oil is at least 55%,
35 preferably 70% by weight of said essential oil, and the
ratio of carvacrol to thymol is at least 10. This
pharmaceutical composition can be used in the prevention and
treatment of coccidiosis in poultry.

CLAIMS

1. A composition characterized in, that it contains the natural substances carvacrol in an amount of 5 ppm to 90% by dry weight, and thymol in an amount of 5 ppm to 80% by dry weight, the weight ratio between carvacrol and thymol being from 1:5 to 10:1.
2. A composition characterized in, that the weight ratio is from 2:3 to 4:1.
3. A diet composition according to claims 1 or 2, characterized in, that it contains carvacrol and thymol in amounts of 5-2000 ppm, preferably 20-600 ppm calculated on dry weight of the diet composition.
4. A diet composition according to claim 3, characterized in, that the diet composition contains 0.1-30 ppm calculated on the dry weight of natural substances, selected from the group consisting of guaiacol, eugenol, capsascins and tannins, which enhance the health and increase the growth, and/or 0.2-50 ppm calculated on the dry weight of natural substances, selected from the group consisting of creosol, anethole, decal-, undeca- and/or dodecalactones, quinoline, ionones and/or irone, gingerol, piperine, propylidene and/or butylidene phthalides, amyl and/or benzyl salicylate.
5. A diet composition according to claim 4, characterized in, that it contains
 - a) 10-70% by weight of cereals,
 - b) 1-12% by weight of feed fat, and
 - c) 10-50% by weight of protein containing nutritious substances of a type other than cereals.
6. A premix according to claim 1 or 2, characterized in, that it contains 1-10% by dry weight of carvacrol and thymol, 0-40% by dry weight of growth improving additives, health enhancing additives and flavourings and 50-99% by dry weight of an absorbing support.
7. A diet additive, characterized in, that it contains 0.2-5% by dry weight of the premix in claim 6, 80-99% by dry weight of vitamins, enzymes, mineral salts, ground cereals,

protein components, carbohydrate components, wheat middlings and/or bran.

8. A drinking water supplement according to claims 1 or 2, **characterized in**, that it contains 2-90% by dry weight of carvacrol and thymol.

9. A drench bath supplement according to claims 1 or 2, **characterized in**, that it contains 30-98% by dry weight of carvacrol and thymol.

10. Use of a composition according to claim 1 or 2 as a bactericide.

11. A composition according to any one of claims 1-8 for use as a medicament.

12. A composition according to claim 11 where the medicament is used against swine dysentery.

13. A composition according to claim 11, where the medicament is used in a drench bath for the treatment of the hoofs of hoofed animals.